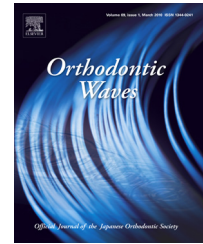




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Case report

A case of adult cleft palate patient treatment with differential maxillary lateral expand distraction osteogenesis using combined expansion appliances

Takeshi Yanagita^a, Hiroki Komori^a, Tomoyo Tanaka^{a,b},
Hiroshi Kamioka^{b,c,*}

^a Department of Orthodontics, Okayama University Hospital, 2-5-1, Shikata-cho, Okayama City, Okayama 700-8525, Japan

^b Advanced Cleft Lip and Cleft Palate Center, Okayama University Hospital, 2-5-1, Shikata-cho, Okayama City, Okayama 700-8525, Japan

^c Department of Orthodontics, Graduate, School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama University, 2-5-1, Shikata-cho, Okayama City, Okayama 700-8525, Japan

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ABSTRACT

A 34-year-old female patient who had undergone surgical treatment for a cleft in the soft palate during childhood received orthodontic treatment for crowding. She had a straight type facial profile and facial asymmetry with a concave area on the left side of the philtrum and mandibular deviation to the left. The surgical scar was observed on the center of the palate. She also had a severely constricted maxillary arch and unilateral cross bite on the left side. In this report, we suggest a novel method for uneven maxillary lateral expansion using a dento-osseous-supported expansion appliance in the frontal side of the maxilla and a modified dental-supported expansion appliance in the mid-palatal area. With this method, we achieved the optimal maxillary expansion in the maxillary frontal and molar areas. As a result of the surgically-assisted orthodontic treatment, facial asymmetry, the facial midline, and severe malocclusion were corrected. Furthermore, the resulting occlusion and facial symmetry were maintained over a 2-year retention period. Although attention must be paid regarding the retention of the expanded maxillary bone, our findings in the present study suggest that differential maxillary lateral expand distraction osteogenesis, which is performed using combined expansion appliances, can be successfully performed in patients with cleft palate.

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* Corresponding author.

E-mail addresses: yanagita@md.okayama-u.ac.jp (T. Yanagita), gmd422091@s.okayama-u.ac.jp (H. Komori), de18037@s.okayama-u.ac.jp (T. Tanaka), kamioka@md.okayama-u.ac.jp (H. Kamioka).

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1. Introduction

Surgically-assisted rapid palatal expansion (SARPE) is often used in cases with problems such as a large transverse discrepancy, a narrow intercuspid dimension, or maxillary arch length deficiency with crowding after extraction cases [1-5]. Recent reports on SARPE have focused on the amount of expansion [6-10], the periodontal status [10-13], surgical techniques [10,14-17], expansion appliances [5,18-21] and the stability of the operation [22-25]. Furthermore, treatment protocols using SARPE or transverse distraction osteogenesis of maxillary deficiency with cleft palate are begun to be established [26-29]. The advances made through this research have made it possible to perform distraction osteogenesis more safely than before. Although most cases with constricted maxillary transverse deficiency can be treated with conventional SARPE, some cases require large differential expansion, both horizontally and sagittally, because of an irregular maxillary arch. In this report, we suggest a new method for differential maxillary lateral expansion using a dento-osseous-supported expansion appliance in the frontal area and a modified dental-supported expansion appliance in the mid-palatal area. Unilateral expansion was performed with an

asymmetric osteotomy split line. Additionally, the dental-supported expansion appliance used in this case was especially designed for easy placement in a surgical operating room.

2. Diagnosis and etiology

A 34-year-old female patient sought orthodontic treatment for crowding. This patient had received a surgical treatment for a cleft in the soft palate during her childhood. She had not undergone any surgical or orthodontic treatment since that time. She had straight-type facial profile and facial asymmetry with a concave area on the left side of the philtrum and mandibular deviation to the left. A surgical scar was observed on the center of the palate. The intraoral view showed severe constricted maxillary arch and unilateral crossbite on the left side (Fig. 1). Her maxillary left 2nd premolar was impacted between the maxillary left 1st premolar and 1st molar. The maxillary right 2nd premolar and left lateral incisor were absent. The mandibular incisors were inclined to the right due to the absence of the 2nd premolars and the prolonged retention of the left 2nd primary molar (Fig. 2). The buccal root of the retained tooth



Fig. 1 – Pre-treatment photographs.

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